Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of	)	
	)	
Amendment of Part 2 of the Commission's	)	ET Docket No. 00-258
Rules to Allocate Spectrum Below 3 GHz	)	
For Mobile and Fixed Services to Support	)	
the Introduction of New Advanced Wireless	)	
Services, including Third Generation	)	
Wireless Systems	)	
	)	
Petition for Rulemaking of the Cellular	)	RM-9920
Telecommunications Industry Association	)	
Concerning Implementation of WRC-2000;	)	
Review of Spectrum and Regulatory	)	
Requirements for IMT-2000	)	
	)	
Amendment of the U.S. Table of Frequency	)	RM-9911
Allocations to Designate the 2500-2520/	)	
2670-2690 MHz Frequency Bands for the	)	
Mobile-Satellite Service	)	

To: The Commission

COMMENTS OF SPRINT CORPORATION

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SUMMARY

Sprint Corporation ("Sprint") over the last few years has invested more than $2 billion dollars to bring broadband fixed wireless services to U.S. consumers. Sprint made this investment in reliance on the Commission's multi-year effort to encourage two-way, digital use of spectrum frequencies at 2150-2162 MHz ("2.1 GHz band") and 2500-2690 MHz.("2.5 GHz band") In the last 12 months Sprint has ramped up its operations in this spectrum to begin offering high speed, two-way, broadband fixed service in competition with digital subscriber line and cable modem services in 13 markets, many of them in rural and underserved markets. The pent up demand for these services is demonstrated by the more than 2000 customers a week who are signing up for Sprint Broadband Direct [SM] in the markets in which it is currently available.

The Communications Act of 1934, as amended, mandates the Commission to encourage the deployment of advanced telecommunications capability to all Americans. The Commission has made considerable efforts to make the 2.1 GHz and 2.5 GHz spectrum hospitable to advanced telecommunications services as part of this mandate. Moreover, the Commission has recognized that the propagation characteristics of this spectrum are particularly well suited for broadband fixed wireless services that can compete vigorously with other facilities-based providers of broadband services.

In this proceeding, however, the Commission will decide whether the 2.1 GHz and 2.5 GHz bands remain a viable host for these services or whether some of the spectrum is reallocated to third generation ("3G") wireless services. If the Commission attempts to reduce by any amount the spectrum available for broadband fixed wireless services, Sprint cannot offer commercially viable, competitive broadband services at 2.1 GHz and 2.5 GHz. Also at risk would be the mutually beneficial relationship that Sprint has formed with multiple educators

across the country to build a shared network that will also advance the country's educational goals.

The Commission is examining two options for opening the 2.1 GHz and 2.5 GHz bands to accommodate 3G wireless services. First, it can allow the 3G operators to share spectrum with the existing fixed wireless licensees. Second, it can segment the bands to reduce the spectrum available for the fixed wireless licensees and provide 3G operators their own spectrum within the bands. Neither option is achievable if the fixed wireless operators are to continue rolling out broadband fixed wireless services.

First, technical studies demonstrate that mobile wireless and fixed wireless operators cannot coexist in the 2.1 GHz and 2.5 GHz bands. Both services are ubiquitous and can operate at any time, making avoidance of mutual harmful interference impossible. Second, the reduction of spectrum as a result of band segmentation would increase the 2.1 GHz and 2.5 GHz fixed licensee's costs so dramatically that any reasonable return on their investment would be erased. Segmentation also would trigger massive relocation of existing licensees to other spectrum bands that have yet to be identified, and in any event, likely cannot provide the propagation characteristics that make 2.1 GHz and 2.5 GHz ideally suited for Sprint's and others' broadband services. Thus neither reallocation option is reasonable if the Commission expects fixed wireless licensees to continue developing and offering facilities-based broadband services in this spectrum.

With its equally strong interest in Sprint PCS' success in the wireless market Sprint does not ask the Commission to choose between important consumer services in this proceeding. Rather Sprint is convinced that sufficient spectrum is available in other frequency bands that is as well or better suited for the development of 3G services.

The Commission has charted a reasoned and well considered path for encouraging the development of the 2.1 GHz and 2.5 GHz bands for advanced fixed wireless services. To abandon that path at this juncture would represent an arbitrary and unreasonable policy change and deprive tens of thousands, and ultimately millions, of U.S. consumers of another facilities-based competitive broadband alternative. The Commission cannot reasonably conclude otherwise.

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To: The Commission

COMMENTS OF SPRINT CORPORATION

Sprint Corporation ("Sprint") hereby submits its comments in response to the Notice of Proposed Rulemaking in the above-referenced proceeding.[1] In the *NPRM*, the Commission explores whether certain frequency bands below 3 GHz should be allocated for advanced wireless services, including third generation ("3G") and future generations of wireless systems. Specifically, the Commission asks whether new advanced fixed and mobile services can be introduced in bands currently allocated to cellular, broadband Personal Communications

[1] *Amendment of Part 2 of the Commission's Rules to Allocate Spectrum Below 3 GHz for Mobile and Fixed Services to Support the Introduction of New Advanced Wireless Services, including Third Generation Wireless Systems; Petition for Rulemaking of the Cellular Telecommunications Industry Association Concerning* Implementation *of WRC-2000: Review of Spectrum and Regulatory Requirements for IMT-2000, Amendment of the U.S. Table of Frequency Allocations to Designate the 2500-2530/2670-2690 Frequency Bands for the Mobile-Satellite Service*, ET Docket No. 00-258, Notice of Proposed Rulemaking and Order, FCC 00-455 (Jan. 5, 2001) ("*NPRM*").

Services ("PCS") and Specialized Mobile Radio services, and in the 1710-1755 MHz, 1755-1850 MHz, 2110-2150 MHz, 2160-2165 MHz and 2500-2690 MHz bands.

Sprint adamantly opposes any Commission effort to reduce the amount of spectrum at 2160-2165 MHz (2.1 GHz band") and 2500-2690 MHz ("2.5 GHz band") now available for the provision of advanced fixed wireless services. More than 2,000 customers a week are subscribing to Sprint's Broadband Direct[SM], a new Internet access service that is ramping up and which competes with digital subscriber line ("DSL") and cable modem services. Sprint strongly urges the Commission to reject proposals that would allow 3G mobile services to use the 2.1 GHz and 2.5 GHz bands. Permitting 3G mobile operators to either share the 2.1 GHz and 2.5 GHz bands or replace existing fixed wireless operators would irreparably compromise Sprint's multi-billion dollar investment to bring competitive advanced broadband wireless services to the mass market residential and small business consumers in the 90 plus markets that Sprint is licensed to serve. Many of these markets are second and third tier markets throughout the United States that have yet to benefit from any broadband services, let alone competition in the provision of advanced services.

The Commission has expended untold resources over the last five years refining its rules for the 2.1 GHz and 2.5 GHz bands to encourage companies like Sprint to invest in advanced fixed wireless services in concert with their partners in the educational community. To disrupt their mutually beneficial relationship would be an unreasonable and arbitrary departure from existing Commission policy and an abandonment of the Commission's statutory mandate under Section 706 of the Telecommunications Act of 1934, as amended (the "Act").

Introduction

Sprint today provides fixed wireless broadband service over owned and leased Multipoint Distribution Service and Multichannel Multipoint Distribution Service channels (collectively "MDS") and Instructional Television Fixed Service channels ("ITFS") in multiple markets[2] in the United States. Sprint has acquired interests in more than 90 markets covering about 30 million households. It holds:

1) licenses for 642 MDS/commercial ITFS channels;

2) leases to use the capacity of 349 MDS/commercial ITFS channels, and

3) leases to use the capacity of 1394 ITFS channels.

Sprint holds a total of 532 leases, two-thirds of which are with ITFS licensees. All of the channels covered by these licenses and leases are located in the 2.1 GHz and 2.5 GHz bands. As described below, Sprint and other companies (including WorldCom, Inc. ("WorldCom") and Nucentrix Spectrum Resources, Inc. ("Nucentrix")) today are using the 2.1 GHz and 2.5 GHz bands to provide a variety of services to the public, including broadband wireless Internet access. In addition, the 2.1 GHz and 2.5 GHz bands is used throughout the country, in some instances for more than 30 years, by schools and other educational entities to provide educational services to students and others, including distance learning and Internet access. No other spectrum is specifically set aside for formal educational instruction. The *NPRM's* proposal to reallocate some or all of the 2.1 GHz and 2.5 GHz bands or to permit sharing between the fixed services being provided by MDS/ITFS incumbents and potential mobile services will seriously affect and may foreclose Sprint's ability to provide service to thousands of customers.

Sprint does not ask the Commission to abandon its promotion of 3G service in the United States. In fact, Sprint PCS intends to launch 3G services. But Sprint strongly urges the Commission not to promote 3G at the expense of incumbent MDS/ITFS licensees and the advanced fixed wireless services that are already being provided in the 2.1 GHz and 2.5 GHz bands. As demonstrated herein, there is an abundance of available spectrum where 3G services can thrive, while still preserving the provision of the much-needed competitive broadband services.

I. Continued Use Of 2.1 GHz And 2.5 GHz Spectrum For Advanced Fixed Wireless Services Will Best Serve The Public Interest.

Sprint is providing advanced fixed wireless services in the 2.1 GHz and 2.5 GHz bands in a number of markets, including many second and third tier markets. WorldCom, Nucentrix and

[2] Those markets are Phoenix, Tucson, Detroit, Colorado Springs, Houston, San Jose, Oakland, Denver, Salt Lake City, Wichita, Melbourne, Fla., Oklahoma City and Fresno.

other operators are also providing such services in a number of other markets. Additional markets will be rolled out rapidly upon Commission grant of the applications filed in the August 2000 two-way filing window-- assuming that the 3G cloud hanging over the 2.1 GHz and 2.5 GHz bands is removed. Many educators and educational entities holding ITFS licenses are introducing these services as well, both in conjunction with commercial operators and on their own. The discontinuance of these services would remove an increasingly vigorous competitor in the broadband access market and harm some of the more innovative educational training programs being introduced around the country.

A. Sprint And Other Companies Have Relied On The Commission's Active Encouragement To Develop The 2.1 GHz And 2.5 GHz Bands For Advanced Fixed Wireless Services.

The Commission in recent years has actively encouraged Sprint and other companies to expend resources to develop the 2.1 GHz and 2.5 GHz bands. As a result, a number of companies have invested billions of dollars, both at auction[3] and in the secondary market, to provide advanced fixed wireless services throughout the country, including wireless broadband Internet access.

Continuing the use of the 2.1 GHz and 2.5 GHz bands for advanced fixed services will ensure the Commission fulfills its Congressional mandate to encourage the development of advanced services and promote local telecommunications competition. An important objective of the Telecommunications Act of 1996 (the "1996 Act") was "to increase choice and competition in all aspects of telecommunications."[4] Section 706 of the 1996 Act mandates that the Commission encourage the deployment of advanced telecommunications capability or advanced services: "[t]he Commission…shall encourage the deployment on a reasonable and

[3] Winners in the MDS Basic Trading Area ("BTA") auction in 1996 acquired BTA licenses, the rights to any unused or forfeited MDS spectrum and preferred rights to unused ITFS channels. *Amendment of Parts 21 and 74 of the Commission's Rules With Regard to Filing Procedures in the Multipoint Distribution Service and in the Instructional Television Fixed Service and Implementation of Section 309(j) of the Communications Act - Competitive Bidding*, Report and Order, 10 FCC Rcd 9589 (1995) ("*MDS Auction Order").*

[4] FCC Office of Engineering and Technology, Mass Media Bureau, Wireless Telecommunications Bureau and International Bureau, *Spectrum Study of the 2500-2690 MHz Band: The Potential for Accommodating Third Generation Mobile Systems*, Interim Report at 22 (Nov. 15, 2000) ("*Interim Report*").

timely basis of advanced telecommunications capability to all Americans (including, in particular, elementary and secondary schools…)."[5]

Section 706 further requires that the Commission determine whether such advanced telecommunications capability is being deployed to *all* Americans in a reasonable and timely manner,[6] and requires the Commission to encourage reasonable and timely deployment.[7] In adopting rules in 1998 that allow MDS and ITFS licensees to apply for two-way authorizations, the Commission supported two-way operations to "speed the deployment of advanced services by permitting service providers to offer a variety of fixed wireless high-speed services more rapidly."[8]

In fact, the Commission's *Digital Declaratory Order*[9] was one of the Commission's first rulings following passage of the 1996 Act to create a vehicle for the deployment of advanced wireless services. The *Digital Declaratory Order* permitted MDS and ITFS licensees to digitize their spectrum,[10] and the Commission later that year facilitated MDS and ITFS licensees' use of their spectrum for high-speed data applications, including Internet access.[11] The 1998 *Two-Way Order* adopted new technical rules that permitted holders of MDS and ITFS spectrum to provide

[5] Telecommunications Act of 1996 tit. VII, § 706, Pub. L. No. 104-104, 1996 U.S.C.C.A.N. (110 Stat.) 56, 153 (reproduced in the notes under 47 U.S.C. § 157). The terms advanced telecommunications capability and advanced services are used interchangeably by the Commission. *Inquiry Concerning the Deployment of Advanced Telecommunications Capability*, CC Docket No. 98-146, Second Report, FCC 00-920, ¶ 11 (Aug. 21, 2000) ("*Advanced Telecommunications Report*"). Advanced telecommunications capability includes infrastructure capable of delivering 200 kilobits per second ("Kbps") in both directions, even if the upstream and downstream paths are asymmetrical. *Advanced Telecommunications Report* ¶ 8. As described below, the fixed broadband wireless service being provided by Sprint meets, and even exceeds this definition.

[6] The Commission correctly notes that in rural and underserved markets, the broadband service that is being provided in the 2.1 GHz and 2.5 GHz bands may be the only broadband service available. *Interim Report* at 22.

[7] *Advanced Telecommunications Report* ¶ 7.

[8] *Id.* ¶ 263.

[9] *Request for Declaratory Ruling on the Use of Digital Modulation by Multipoint Distribution Service and Instructional Television Fixed Service Stations,* Declaratory Ruling and Order, 11 FCC Rcd 18839 (1996) ("*Digital Declaratory Order*").

[10] *Id.*

[11] *The Mass Media Bureau Implements Policy For Provision Of Internet Service On MDS And Leased ITFS Frequencies,* Public Notice, 11 FCC Rcd 22419 (1996).

two-way transmissions, including voice, video and data.[12] As noted in the Commission's *Interim Report*, both MDS and ITFS licensees have taken advantage of the increasing flexibility of the Commission's rules to begin launching broadband services, focusing on residential subscribers and small businesses, many in second and third tier markets.[13] These licensees, including Sprint, have spent billions of dollars in acquiring licenses and building out their advanced fixed wireless systems in reliance on the Commission's staged opening of the 2.1 GHz and 2.5 GHz bands to broadband two-way service.

To abandon at this juncture an established policy that enthusiastically opened the 2.1 GHz and 2.5 GHz bands to advanced fixed wireless services would be an arbitrary departure from well-reasoned, existing Commission precedent. The Commission can change established policy only when it has determined through "reasoned analysis indicating that prior policies and standards are being deliberately changed, [and] not casually ignored."[14] A reversal of Commission policy towards MDS/ITFS would be contrary to its Congressional mandate, and would create a public interest harm by depriving substantial portions of the public of a needed service, and completely eliminating a competitive choice in other markets.[15] In addition, as described more fully below, educational opportunities would be adversely affected by the elimination of the mutually beneficial long term relationships that exist between MDS and ITFS entities, and potentially halt ITFS operations. Based on these results, the Commission could not demonstrate that a reallocation of the 2.1 GHz and 2.5 GHz bands allocation resulted from reasoned analysis.

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[12] *Amendment of Parts 21 and 74 to Enable Multipoint Distribution Service and Instructional Television Fixed Service Licensees to Engage in Fixed Two-Way Transmissions*, Report and Order, 13 FCC Rcd 19112 (1998) ("*Two-Way Order*"), *recon.*, 14 FCC Rcd 12764, *further recon.*, FCC 00-244 (July 21, 2000).

[13] *Interim Report* at 20-21.

[14] *Communications Satellite Corporation v. FCC*, 836 F.2d 623, 639 (D.C. Cir. 1988) (*citing Greater Boston Television Corp. v. FCC*, 444 F.2d 841 (D.C. Cir. 1970), *cert. den*., 403 U.S. 923 (1971)); *see also Channel 51* of *San Diego, Inc. v. FCC,* 79 F.3d 1187 (D.C. Cir. 1996) (vacating in part and remanding in part a Commission decision for a lack of explanation in a change in interpretation of Section 305 of the Act); *Achernar Broadcasting Co. v. FCC*, 62 F.3d 1441 (D.C. Cir. 1995).

[15] Even in urban areas, high-speed services are not always available. *See infra* at 10-12.

B. Sprint Is Providing Today Advanced Fixed Wireless Services In The 2.1 GHz And 2.5 GHz Bands At Data Rates Significantly Greater Than 3G Services Propose.

The Commission correctly concludes in the *NPRM* that it should not define either 3G or advanced wireless services, but that it should rely on the "dynamic nature of the wireless industry" and its flexible approach to spectrum management[16] and allow the marketplace to determine what services are included in the definition of advanced wireless service. The broadband Internet access that Sprint already is providing in the 2.1 GHz and 2.5 GHz bands provides higher speeds than envisioned by the Commission for advanced services and at substantially higher speeds than initial 3G offerings, and is fulfilling a marketplace need, as will the local and long distance voice and data services that Sprint intends to provide over this spectrum.

In reliance on the Commission's decisions to invite and encourage use of the 2.1 GHz and 2.5 GHz bands for advanced broadband services, Sprint has invested more than $1.2 billion to acquire the spectrum necessary to develop its two-way system, another approximately $1 billion to staff, organize and begin rolling out its operations and will spend significantly more to deploy additional facilities and to further build-out its system. Sprint started organizing in August, 1999 to develop its two-way system and spent much of 2000 ramping up to provide service, including developing engineering designs, preparing and filing applications with the Commission and purchasing equipment. It has invested significantly more to build-out its two-way system, and its fixed wireless operations have grown from a handful of strategic planners to nearly 1000 employees.

Sprint Broadband Direct[SM] service was first launched in Phoenix on March 31, 2000. The service was launched in Tucson on June 16, in Detroit on September 18 (business only), Colorado Springs on September 19, Houston on October 3, San Jose and Oakland on November 2, Denver on November 14, Salt Lake City on November 15, and Wichita on December 5. In 2001, Sprint launched Melbourne, Fla. on January 18, Oklahoma City on January 22 and Fresno on January 23. Applications for additional operational authority in 15 markets were granted on December 6.

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[16] *NPRM* ¶ 18.

As of December 31, 2000, Sprint was using its two-way channels to provide advanced fixed wireless services to more than 20,000 residential and small business customers in 10 markets. It has since added three markets. Sprint is currently adding over 2,000 new customers every week. By the end of 2001, Sprint expects to be providing advanced fixed wireless services to tens of thousands more customers.

Approximately 25 companies are using MDS/ITFS spectrum to offer high-speed Internet access in at least 43 markets, and at least half of those markets are rural.[17] The Commission has quoted projections of 1.2 million residential and 300,000 business MDS broadband subscribers by 2003.[18]

Sprint and its partners filed nearly 400 applications for 45 markets prior to, and in the Commission's August two-way filing window. Sprint expects to file many more applications in the next window, anticipated in April. In the August window, Sprint filed applications in markets that cover 24.8 of the 30 million households covered by its licenses. With its initial roll-out, Sprint is offering consumers and small businesses high-speed Internet access at downstream rates of 512 Kbps to 1.5 million bits per second (Mbps) with burst rates up to 5 Mbps and upstream rates up to 256 Kbps and prices designed to compete vigorously with DSL and cable modem services. These bit rates are clearly fast enough to qualify as advanced wireless services and are faster than those actually being provided through the use of cable modems.[19] As the Sprint network is built-out, it will use these same broadband facilities to deliver local and long-distance voice, high-speed Internet access and other data services over a single connection. The services being proposed for 3G have substantially slower speeds even slower than what the Commission describes as an advanced service.[20]

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[17] *Id.* at 21.

[18] *Interim Report* at 21 n.26.

[19] Cable modems can provide service at downstream speeds of 27 Mbps and upstream speeds of 10 Mbps. In practice, however, speeds typically range from several hundred Kbps to 1.5 Mbps for a number of technical reasons, including cable's shared architecture, the proportion of capacity actually devoted to advanced services and congestion. *Advanced Telecommunications Report* ¶ 33.

[20] *See, e.g.*, David Pringle and Kevin J. Delaney, *Next Generation of Cellphones Becomes Murky*, Wall Street Journal, Feb. 21, 2001, at B1, B4 (*"Next Generation").*

C. Realization Of Vigorous Local Competition Is Fundamental To The Success Of The 1996 Telecommunications Act.

Multiple entrants - particularly facilities-based entrants[21] - in *all* local markets, will ensure more robust competition, lower prices and innovative services. Allowing the continued development of advanced fixed wireless services in the 2.1 GHz and 2.5 GHz bands will ensure that a monopoly or duopoly market for the Internet broadband access market does not evolve, leaving some consumers with only a choice between DSL and cable modem services and others with no choice at all.[22]

1. Advanced Fixed Wireless Service Offerings In The 2.1 GHz And 2.5 GHz Bands Increasingly Will Provide Facilities-Based Local Competition, Including In Second And Third Tier Cities.

The Commission repeatedly has recognized the potential for advanced fixed wireless services being provided over MDS and ITFS spectrum as a source of local competition to established providers. In the *Interim Report,* the Commission noted that "[n]ationwide deployment of fixed two-way MDS systems will provide Americans with another option for high-speed access."[23] The two-way rules were adopted, in part to:

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[21] The Commission has emphasized the importance of facilities-based competition, particularly to the provision of advanced telecommunications services noting "[w]e remain committed to removing obstacles to competitive entry into local telecommunications markets by any of the avenues contemplated in the 1996 Act. Nonetheless, we have recognized that the greatest long-term benefits to consumers will arise out of competition by entities using their own facilities. Because facilities-based competitors are less dependent than other new entrants on the incumbents' networks, they have the greatest ability and incentive to offer innovative technologies and service options to consumers. Moreover, facilities-based competition offers the best promise of ultimately creating a comprehensive system of competitive networks….One particular benefit that we hope will arise from the growth of facilities-based competition is increased availability of advanced services." *Promotion of Competitive Networks in Local Telecommunications Markets; Wireless Communications Association International, Inc. Petition for Rulemaking to Amend Section 1.4000 of the Commission's Rules to Preempt Restrictions on Subscriber Premises Reception or Transmission Antennas Designed to Provide Fixed Wireless Services; Implementation of the Local Competition Provisions in the Telecommunications Act of 1996; Review of Sections 68.104, and 68.213 of the Commission's Rules Concerning Connection of Simple Inside Wiring to the Telephone Network*, First Report and Order and Further Notice of Proposed Rulemaking in WT Docket 99-217, Fifth Report and Order and Memorandum Opinion and Order in CC Docket No. 96-98, and Fourth Report and Order and Memorandum Opinion and Order in CC Docket No. 88-57, FCC 00-366 (Oct. 25, 2000).

[22] The benefits to competition from a duopoly are only marginally better than what exists under a monopoly situation. *See Implementation of Section 6002(b) of the Omnibus Budget Reconciliation Act of 1993*, First Report, 10 FCC Rcd 8884, at 8845, 8867 (1995); *1998 Biennial Regulatory Review, Spectrum Aggregation Limits for Wireless Telecommunications Carriers*, Report and Order, 15 FCC Rcd 9219, ¶ 83 (1999) ("As we have extensively documented, the introduction of new providers and the end of the cellular duopoly has led to substantial consumer benefits through reductions in the price of service and in new and enhanced services").

[23] *Interim Report* at 22.

> provide significant benefits to consumers. A new, competitive group of players will now enter the market for high speed two-way communications service. Both individual and business consumers will be able to use the high-speed and high-capacity data transmission and Internet service that will be available through the new systems. Also, consumers will be able to take advantage of new video-conferencing, distance learning and continuing education opportunities .... *Most importantly from a consumer perspective, there will be another choice of provider for these services, helping to drive down the costs in a more competitive market*[24] (emphasis added).

Industry market projections and Sprint's own experience indicate that the public is clamoring for the type of affordable broadband access that Sprint and the other MDS operators are providing. The fixed wireless broadband services market is predicted to increase from $767 million in 1999 to $7.4 billion by 2003.[25] Fixed wireless broadband subscribership is expected to increase from 200,000 this year to 9.4 million in 2005.[26] Approximately 70 percent "of the nearly 10 million estimated fixed wireless broadband subscribers will be served via MDS/ITFS."[27]

The penetration rate for total online households is expected to reach 67 percent in five years, with one-third to one-half of those having high-speed connections.[28] Residential high-speed subscribership will increase from almost 1.9 million in 1999 to almost 36 million in

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[24] *Two-Way Order* at 19116-7.

[25] *Interim Report* at 21-22. "Even at this early stage in the development of the broadband Internet, new media-rich applications are beginning to appear across the net, with software and application development occurring at a very high pace. High quality, multi-channel, two-way video is rapidly occurring at a very high pace. High quality, multi-channel, two-way video is rapidly becoming all pervading and will soon contribute to the demand for higher capacity Internet access…." PR Newswire, *Dramatic Growth in Broadband Wireless Predicted* (Dec. 15, 2000) *available at* http://www.findarticles.com/cf_0/m4PRN/2000_Dec_15/6801275/print.jhtml (visited Feb. 14, 2001) ("*Dramatic Growth*").

[26] *Interim Report* at 21-22.

[27] *Interim Report* at 28.

[28] *Advanced Telecommunications Report* ¶ 186. Fifty-one percent of Internet households will have a high-speed connection by 2005. Strategis Group, *Residential High-Speed Internet: Cable Modems, DSL and Fixed Wireless,* at 29 (Jan. 2001)*("Strategis Report*").

2005.[29] Total high-speed Internet access (business and residential) increased 148 percent from December 1999 to December 2000.[30]

Despite these optimistic projections, the Commission has cautioned that a lack of broadband competition in certain markets could lead to higher prices.[31] According to the Strategis Report, "nearly 11 percent of all surveyed users complained that they had tried to obtain [high-speed] access but were unsuccessful."[32] Cable and DSL have not provided the level of broadband deployment that the public expected, leaving many consumers with no broadband options. Approximately 46 percent of U.S. households have no access to terrestrial broadband services, and even by 2005, 18 percent will still lack access.[33] Cable requires substantial financial investment to provide broadband service,[34] is "poorly situated to offer service to many business districts,"[35] and often does not actually provide service at speeds fast enough to qualify as advanced services.[36] Like cable, DSL requires costly upgrades, and also has technical

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[29] *Strategis Report* at 7.

[30] *High-speed Internet access jumps 148% in December, available at* http://www.cable-broadband.com/News.asp?top=Y&contentID=2147431677 (visited Feb. 9, 2001).

[31] *Advanced Telecommunications Report* ¶ 8.

[32] *Strategis Report* at 18. Thirty six percent of those who tried unsuccessfully to obtain access applied to their local phone company, and twenty seven percent applied with their local cable company. *Id.* Demand for service "is still far outpacing supply." *Id.* at 51. As of the second quarter of 2000, nearly 31 million homes could not receive either cable or DSL high-speed Internet service, "primarily due to cable and phone operators' inability to upgrade all of their networks." *Strategis Report* at 83. *See, infra* the discussion of Sprint's provision of broadband Internet access to the Varnett School in Houston, which after waiting for more than eight months to receive DSL, obtained service from Sprint two months after Sprint began providing service in that market.

[33] Peter J. Brown, *Two-way Satellite Broadband, Will consumers get everything they want? available at* http://www.broadbandweek.com/news/010122/print/010122_wireless_two.html (visited Jan. 25, 2001) (citing to information made available by the Yankee Group).

[34] National Telecommunications and Information Administration and Rural Utilities Service, *Advanced Telecommunications in Rural America: The Challenge of Bringing Broadband Service to All Americans*, (Apr. 2000) at 10 ("*Rural America Report*").

[35] *Advanced Telecommunications Report* ¶ 34. Cable customers are largely residential, and the business districts must be initially wired, a hugely expensive undertaking.

[36] *Id.* ¶ 33, *Rural America Report* at 11.

limitations[37] that often restrict the provision of service in rural areas.[38] Local exchange carriers also provide broadband services through high-speed circuit switched services like T1 lines and over fiber, both of which tend to be expensive and not economically viable for small businesses and residential customers.[39] Two-way high-speed Internet access over satellite, which currently cannot provide upstream high speed transmission will "not be widely available for years."[40] Local multipoint distribution systems ("LMDS") have been rolled out only in the largest markets.[41] Thus, the broadband access currently being provided in the 2.1 GHz and 2.5 GHz bands unquestionably is the best near term candidate for the provision of competitive broadband access. Unlike any of these other competing services, the service provided by Sprint can be constructed and operational in a very short time period. The services do not require costly and time consuming upgrades to existing equipment, but rather the installation of equipment at the hub site and the subscriber's site.

The Commission has recognized that "[e]vidence indicates that over the next several years the demand for affordable broadband services in the United States will far outpace the ability of incumbent local exchange carriers and cable operators to provide those services."[42] It

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[37] Technical limitations will prevent DSL from becoming universally available. First, it is distance sensitive meaning that the customer must be within a certain distance from carrier's central office. Second, the presence of certain technology on the loop, designed to enhance voice traffic quality, often prevents DSL deployment. *Advanced Telecommunications Report* ¶ 39.

[38] *Rural America Report* at 12.

[39] *Advanced Telecommunications Report* ¶ 41. *See also*, *Strategis Report* at 5; *Rural America Report* at 14,16; *see also Strategis Report* at 90 (for fiber deployment, "[c]ost is still the largest hurdle"). In addition, many cities are now "limiting when and where streets can be dug up. The new skirmishes will likely mean many businesses will have to wait longer and pay more for broadband access for their offices in major cities." Max Smetannikov, C*an You Dig It? available at* http://www.zdnet.com/inteek/stories/news/0,4164,2684289,00.html (visited Feb. 12, 2001).

[40] *Rural America Report* at 14; *see also* Comments of EchoStar Satellite Corporation in *Inquiry Concerning High-Speed Access to the Internet Over Cable and Other Facilities* (Nov. 27, 2000), GN Docket No. 80-185 (DBS can provide only downlink transmissions via satellite. Uplink transmissions are provided via telephone).

[41] *Rural America Report* at 16.

[42] *Interim Report* at 21.

noted that "[t]hese systems will provide a significant opportunity for further competition with cable and digital subscriber line (DSL) services in the provision of broadband services in urban areas and deliver broadband services to rural areas."[43] As demonstrated, the failure of "robust" competition between cable and DSL to materialize in many markets, arguably creates a "public interest harm"[44] that can be prevented only if needed competition is spurred, by the Commission's support of the continued development of advanced fixed wireless services in the 2.1 GHz and 2.5 GHz bands.

2. MDS/ITFS May Be The Only Providers Of Broadband Service In Rural And Underserved Markets.

The Commission has expressed concern repeatedly over the lack of broadband deployment to certain populations, particularly those in rural areas and to minority consumers.[45] This concern is echoed elsewhere in the government.[46] A recent National Telecommunications and Information Administration ("NTIA") and Rural Utilities Service study deplored the lack of broadband deployment in rural areas, noting that both cable modem and DSL technologies are being deployed primarily in urban areas with large populations.[47] Continued roll-out of fixed wireless services in the 2.1 GHz and 2.5 GHz band will alleviate these concerns.

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[43] *Id* at 17-18. Although cable and DSL are not the only other providers of high-speed Internet access, they are the major providers and provide service to the vast majority of broadband customers. *Applications for Consent to the Transfer of Control of Licenses and Section 214 Authorizations by Time Warner Inc. and American Online, Inc.*, CS Docket No. 00-30, Memorandum Opinion and Order, FCC 01-12 ¶ 165 (Jan. 22, 2001) *("AOL-Time Warner").*

[44] *Id.*

[45] *Advanced Telecommunications Report* ¶¶ 220-223, 237-241 (discussion of lack of advanced services in rural areas, low income areas, and minority populations). *See also, High-Speed Internet Access Report* at 4, and tbl.8. Rural schools and libraries are among those with the lowest access. Benton Foundation, *Losing Ground Bit by Bit: Low Income Communities in the Information Age* (1998) *available at* http://www.benton.org/Library/Low-Income/ (visited Feb. 6, 2001).

[46] *See, e.g.,* Rural Electrification Loan Restructuring Act, Pub. L .No. 103-129, 1992 U.S.C.C.A.N. (107 Stat. 1356), (codified at 7 U.S.C. § 902 *et seq).* This Act is intended to spread the deployment of advanced services and insure that services are deployed at uniform rates in rural and non-rural areas. A number of legislative provisions were proposed in the 106th Congress recognizing the need for additional broadband deployment in rural and underserved areas. Lennard G. Krugger and Angele A. Gilroy, *IB10045: Broadband Internet Access: Background and Issues, available at* http://www.cnie.org/nle/st-49.html (visited Feb. 28, 2001).

[47] *Rural America Report* at 17 ("Deployment in urban and rural areas is not proceeding at a comparable pace. For various reasons, the major cable and DSL providers are both concentrating on serving metropolitan urban areas with

Sprint, is already providing service to rural areas and intends to increase its service to such areas as additional applications are granted. As the attached maps for Melbourne, Florida and Wichita, Kansas (two of Sprint's operational two-way markets)[48] demonstrate, the service being provided by Sprint is available to a much larger area, including the surrounding rural communities, and to many more potential customers than the service being provided by either cable or DSL in the same areas. Recognizing that MDS/ITFS can meet the broadband needs of these communities, the Commission has noted, "in rural or otherwise underserved markets in the country, MDS/ITFS may be the sole provider of broadband service."[49] Fixed wireless broadband providers, using MDS/ITFS channels "can deploy their networks much more quickly, [with broader coverage] and with substantially less expense than is required to build a network capable of supporting either cable-modem or DSL service."[50] NTIA agrees that MDS "holds promise for rural areas."[51] As demonstrated by the markets in which Sprint and the other MDS providers already have launched service, MDS is fulfilling that promise.

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high population densities. The likelihood of receiving broadband service through either technology declines with population density. As a result, residents in rural areas will generally be the last to receive service .... Providers with both rural and non-rural service areas will likely bring broadband to their larger, urban, and more lucrative markets first, whereas rural providers are most likely to serve rural towns before remote, out-of-town areas." The *Rural America Report* explains the importance of broadband access noting, "[a]vailability of advanced telecommunications will become essential to the development of business, industry, shopping and trade, as well as distance learning, telemedicine, and telecommuting. The rate of deployment therefore has implications for the welfare of Americans and the economic development of our nation's communities. This is particularly true for those who live in the rural towns and countryside..." *Rural America Report* at 2. *See also* National Telecommunications and Information Administration and Economic and Statistics Administration, *Falling Through the Net: Toward Digital Inclusion*, at xviii (Oct. 2000) ("*NTIA Digital Divide Report*") ("Rural areas, for example, are now lagging behind central cities and urban areas in broadband penetration at 7.3%, compared to 12.2% and 11.8%, respectively").

[48] Attached hereto as Attachment A. It is important to note that the protected service area of an MDS or ITFS licensee extends 35 miles from the transmitter site. This distance would clearly include many rural areas.

[49] *Interim Report* at 22; *NTIA Digital Divide Report; Rural America Report*. "MDS's larger radius makes the service well suited for not only urban and suburban residential customers, but also customers in rural, underserved, and unserved areas, where the larger cell-size substantially reduces the cost of providing service." *Advanced Telecommunications Report* ¶ 39. Fixed wireless carriers are targeting rural areas for several reasons: (1) most rural markets have a densely populated center of business and residential activity; (2) wireless signals, particularly MDS, far exceed DSL distance limitations; (3) rural areas are often underserved by broadband technologies and infrastructure and wireless provides an inexpensive and quick way to reach untapped networks. *Strategis Report* at 69.

[50] *Advanced Telecommunications Report* ¶ 44. Wireless networks do not have the costs, in terms of finances and time, associated with installing and maintaining wires. Such networks can also be rolled out "in a manner more closely related to the product demand they encounter" because once an antenna is installed, on-premises transceivers are only installed for subscribing customers. *See also, Strategis Report* at 5.

[51] *Id.* at 26

D. Forcing Relocation Of MDS/ITFS Operations Would Abandon The Commission's Long Term Commitment To Enhancing U.S. Education.

The Commission's *Interim Report* noted that 1,275 entities hold 2,175 ITFS licenses and provide service to over 70,000 registered receive locations.[52] The Commission has stressed over the years, and most recently in the *Two-Way Order,* that it was not abandoning its commitment to ITFS distance learning. The *Two-Way Order* states, "[w]e emphasize that we are not reallocating the spectrum at issue. The ITFS spectrum remains allocated for the use of educators and any use of it by MDS operators is subject, within the parameters of our Rules, to the needs of those educators."[53] Any change to the ITFS allocation as proposed in the *NPRM* would be just such an abandonment of its commitment to ITFS[54] and would likely end ITFS services.[55]

Educators use the spectrum to provide formal classroom instruction, distance learning, video conferencing capability, training for teachers and administrators, health professions and public safety officers.[56] Two-way will permit "ITFS operators to bring a wide variety of broadband services to educational users."[57] "Under the flexibility of the *Two-Way Order,* ITFS licensees can devise systems that provide educational users with broadband access for a variety of video and data applications, thereby establishing ITFS as an integral educational tool for school districts across the country."[58]

Educators view the broadband access provided by Sprint as vitally important:

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[52] *Interim Report* at 18. Registration of receive sites is no longer necessary, unless eligibility for the ITFS channels is based on those receive sites. Thus, the number of actual receive sites is probably much higher. *Interim Report* at 18-19.

[53] *Two-Way Order* ¶ 13.

[54] *See* Comments of National ITFS Association and Catholic Television Network filed in this proceeding.

[55] *Id. See, e.g.,* Anthony Shadid, *Fight puts airwaves at risk, available at* http://www.boston.com/dailyglobe2/041/metro/Fight_puts,_airwaves_at_risk_+.shtml (visited Feb. 12, 2001) (when asked about moving the ITFS operations of Boston Catholic Television to another frequency band, their chief engineer responded "It would probably be the death of a lot of what we do here").

[56] *Interim Report* at 19.

[57] *Id.* at 18.

[58] *Id.* at 20.

> [f]or education, broadband access means the elimination of time and distance from the learning equation. Broadband carries with it powerful multimedia learning opportunities, the full interactivity of instructional content, and the quality and speed of communications. Broadband access today is 50 to several hundred times more powerful than its precursors. Broadband access tomorrow holds even greater promise.[59]

Broadband access will deliver richer content and interactive environments, improved testing methods through web-based adaptive testing, and better and broader access to education by more individuals.[60]

As described below, the mutually interdependent relationships between MDS operators, such as Sprint, and ITFS licensees, are integral to the success of distance learning and of fixed broadband roll-out. Implementation of any of the frequency reallocation changes suggested by the Commission in the *NPRM* would harm irreparably that relationship, and in turn, both distance learning and fixed broadband rollout.

II. Although Sprint Generally Supports Flexible Spectrum Use, Its Fixed MDS Operations Cannot Share The 2.1 GHz And 2.5 GHz Bands With Mobile Users.

One of the guiding principles of the Commission's 1999 *Spectrum Policy Statement,* was the recognition that "[f]lexible allocations may result in more efficient spectrum markets."[61] The Commission observed that affording licensees flexibility in the design of their systems allows ready response to consumer demands.[62] Sprint supports the Commission's policy of allowing flexible use of spectrum licenses if circumstances permit. The overwhelming evidence, however, demonstrates that the 2.1 GHz and 2.5 GHz bands cannot be opened to flexible use.

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[59] Web-Based Education Commission, *Power of the Internet for Learning: Moving From Promise to Practice*, at 22 (Dec. 2000) ("*Web-Based Education Report*").

[60] *Web-Based Education Report* at 22, 23, 60, 80, 99. *See also* R*emarks of Michael K. Powell Before the North Dakota Telecommunications Technology Symposium* (May 5, 1999), *available at* http://www.fcc.gov/Speeches/Powell/spmkp904.html (visited Feb. 9, 2001) ("The full panoply of high-speed, broadband, real-time, and interactive capabilities make the idea of State, regional, national or global 'universities' a reality, wherein the importance of the proximate location of students and instructors is rendered almost meaningless. That should revolutionize the education").

[61] *Principles for Reallocation of Spectrum to Encourage the Development of Telecommunications Technologies for the New Millennium,* 14 FCC Rcd 19868, 19870 (1999) *("Spectrum Policy Statement").*

[62] *Amendment of the Commission's Rules Regarding the 3 7.0-38.6 GHz and 38.6-40 GHz Bands,* Report and Order and Second Notice of Proposed Rulemaking, 12 FCC Rcd 18,600, 18,616 (1997).

The potential for harmful interference among incumbent fixed users and 3G mobile users, more than any other factor, will not allow co-channel sharing of the 2.1 GHz and 2.5 GHz bands.

The Balanced Budget Act of 1997 authorizes the FCC to allocate spectrum for flexible use, if such use is consistent with the requirements of Section 303(y) of the Act.[63] Section 303(y) reflects "[c]ongressional concern that proposals for the flexible use of spectrum have the potential, if not thoroughly considered, to create interference between services and discourage investment and technical innovation."[64] The Commission must make a positive determination that "such issues have been considered, and that these potential problems will not be realized, before it approves such flexible use of spectrum allocations."[65]

Based upon available technology, mobile and fixed users cannot use the 2.1 GHz and 2.5 GHz bands on a co-primary basis without creating harmful interference to both service providers. As the *Harter Study* attached to the *Interim Report* concludes, "Co-frequency utilization by existing and planned MMDS/ITFS services and proposed 3G services will not be possible because of unavoidable and unacceptable interference between the two services."[66]

The Harter Study found that interference from 3G services into MDS/ITFS will be harmful based on (1) the sensitivity of the MDS/ITFS receivers (both hub and customer premises equipment ("CPE") based on the need to utilize higher order modulation techniques, (2) the

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[63] *Id.*; Section 303(y) requires the Commission, as part of its allocation process, to make the following affirmative findings before permitting flexible use: (1) such use is consistent with international agreements to which the United States is a party; and (2) the Commission finds, after notice and an opportunity for public comment, that -- (a) such an allocation would be in the public interest; (b) such use would not deter investment in communications services and systems, or technology development; and (c) such use would not result in harmful interference among users.

[64] *Service Rules for the 746-764 and 776-794 MHz Bands and Revisions to Part 27 of the Commission's Rules,* First Report and Order, 15 FCC Rcd 476, 481 (2000).

[65] *Id.* at 481; Consideration of interference created between new and incumbent users has been paramount in other flexible use decisions: *See, Id.* (decision in favor of flexible use for the 700 MHz band, found that no additional interference to incumbent users would be created); *Amendments to Parts 1, 2, 87 and 101 of the Commission's Rules to License Fixed Services at 24 GHz,* Report and Order, 15 FCC Rcd 16934, 16939 (Aug. 1, 2000) (flexible use determination rejected for the 24 GHz band because of harmful interference to incumbents); *Amendment of the Commission's Rules Regarding the 37.0-38.6 GHz and 38.6-40.0 GHz* Bands, Memorandum Opinion and Order, 14 FCC Rcd 12428, 12441 (1999) (flexible use approved, but implementation of mobile use for the 39 GHz spectrum was deferred until interference protection for incumbents could be ensured).

[66] *Interim Report* at A-66, App. 5.2 (*George W. Harter, Feasibility Study on Spectrum Sharing between Fixed Terrestrial Wireless Services and Proposed Third Generation Mobile Services in the 2500-2690 MHz Bands ("Harter Study")).*

commercial necessity of utilizing economical receive antennas and the inability to discriminate the mobile 3G services for interference isolation, (3) the already compromised interference environment created by existing levels of co-channel interference between neighboring markets, and (4) the need for high degrees of frequency reuse within urban markets to meet expected capacity demands."[67]

The *Harter Study* predicts that 3G service will also suffer harmful interference from continued use of the bands by ITFS and MDS incumbents "[I]nterference from MDS/ITFS services into 3G services will be severe because of (1) the use of omnidirectional mobile receive antennas with no ability to discriminate, (2) the high power levels of the fixed services at the hub broadcast over a wide or omnidirectional area, (3) the power levels of the CPE return path transmissions and (4) the high probability that 3G receivers will be in close proximity to either MMDS/ITFS hub or CPE sites."[68]

A recently released supplement to the *Harter Study*, "Interference to 3G Systems from ITFS/MDS Systems Sharing the Same Frequencies," confirmed that harmful interference will be caused to 3G base stations and mobile units by MDS/ITFS base stations, regardless of which variant of 3G is used, unless in most cases the separation distance is equal to the radio horizon. The supplemental study concluded that, "[t]hese calculations prove conclusively that cochannel frequency sharing between 3G and ITFS/MDS systems is not a practical solution. MDS/ITFS systems are operating in most markets across the country, and the required separation distances would only permit 3G systems to operate without interference in the most rural areas."[69]

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[67] *Id.*

[68] *Id* at A-66.

[69] George Harter, *Interference to 3G Systems from ITFS/MDS Systems Sharing the Same Frequencies*, at 3. This supplemental study is attached to the comments of the Wireless Communications Association International, Inc. in

The *Interim Report* emphasizes that 3G systems and incumbent MDS/ITFS services are both ubiquitous and may operate at any time, thus making avoidance of mutual interference impossible.[70] The *Interim Report* concludes, "if currently contemplated 3G systems were to share the same spectrum or channels in any given geographic area large co-channel separation distances would be needed between 3G systems and incumbent ITFS and MDS systems. Without adequate geographic separation, 3G systems would cause extensive harmful interference to incumbent ITFS and MDS systems."[71]

In the final analysis, the *Harter Study* concludes "that it is impossible for 3G services to coexist in the same frequency band with MDS/ITFS fixed services. The level of co-channel interference from 3G hubs alone is sufficient to devastate the commercial operation of a MDS/ITFS system. If the potential for interference from 3G hubs to MDS/ITFS hubs and from 3G mobile units to MDS/ITFS hubs and CPE is factored into the equation, the MDS/ITFS system will be completely unusable."[72]

The finding that severe interference will be generated from incumbent fixed users to 3G users, and from 3G mobile operations to incumbent fixed users, in a shared 2.1 GHz and 2.5 GHz bands frequency environment, makes the required showing of non-interference under Section 303(y) of the Act impossible. The Commission must conclude, after due consideration

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this proceeding. The *Interim Report* found that in 49 of the 50 largest metropolitan areas, all 31 MDS/ITFS channels are licensed within 100 miles. *Interim Report* at 43. "Accordingly, based on the assumptions used for this initial analysis, sharing between 3G systems and ITFS/MDS operations is extremely problematic. At this point, there does not appear to be enough spectrum in the 2500-2690 MHz band in the populated areas to support a viable 3G service." *Id.* at 53.

[70] Predicting the interference presented by mobile 3G units, which potentially can operate at any location at any time, required assumptions about deployment that were beyond the scope of the *Interim Report.* Thus, a complete analysis was not presented. *Interim Report* at 39.

[71] *Interim Report* at iii.

[72] *Interim Report* at A-74. Although the *Interim Report* focused on co-channel interference using the conservative 45 dB D/U ratio necessary to protect analog operations, the *Harter Study* specifically analyzed the potential for co-channel interference to both analog and digital devices, and Harter's conclusions apply to both.

of its statutory responsibilities under Section 303(y), that this spectrum cannot be designated for flexible use and sharing with 3G mobile users.[73]

III. Sprint Cannot Operate Viable Advanced Fixed Wireless Services Under Any Of The Commission's Band Segmentation Options.

If the Commission were to adopt any of the band segmentation options that it proposed in the *Interim Report*, Sprint likely would cease providing its Broadband Direct[SM] service. Sprint requires access to the entire 2.1 and 2.5 GHz bands to provide its service, and any diminution of the spectrum to which it enjoys access today would render its business plan useless. As demonstrated by the *HAI Study*, "[r]eductions in spectrum will force MMDS operators to limit their coverage areas and/or implement more expensive network configurations to serve the same number of potential subscribers, resulting in their inability to provide service efficiently and economically."[74] Specifically, any reduction in spectrum will require operators to invest significantly more money to reach the same number of customers and destroys the viability of the business case.

A. Sprint Requires Access To All Of The Allocated 2.1 GHz And 2.5 GHz Spectrum For Its Advanced Fixed Wireless Services.

As described in the *HAI Study*, a broadband MDS/ITFS system includes one or more hub like sites containing radio equipment and antennas for transmitting and receiving data signals to and from subscribers.[75] Depending on the size of the geographic market and the population within that market, a single site, usually with one tall antenna and a high power transmitter

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[73] The interference considerations that prohibit sharing of the 2.1 GHz and 2.5 GHz bands on a co-primary basis between incumbent fixed users and 3G users, also prevent the creation of secondary markets in these bands for leasing to 3G users.

[74] HAI Consulting, Inc., *MDS/MMDS/ITFS Two-Way Fixed Wireless Broadband Service: Spectrum Requirements and Business Case Analysis*, White Paper (Feb. 2001) ("*HAI Study*") (attached as Attachment B to the Comments filed by the Wireless Communications Association International, Inc. in this proceeding) at 2.. The *HAI Study* studies the economic implications of removing 90 MHz of spectrum from MDS/ITFS operations. "The Model clearly demonstrates that if spectrum for an MMDS/ITFS network is reduced, there is a direct, virtually linear, effect on capital requirements and operating expenses and a negative effect on the attractiveness of the business opportunity." *Id.* at ii, 25.

[75] *Id.* at 3-4.

(supercell) or a multi-site with several shorter towers and low power transmitters (cellular) system will be deployed.[76] Each hub site combines the subscriber transmissions into one transmission system and connects them to an Internet service provider ("ISP"), and also transmits the information from the ISP back to the subscribers.[77] A supercell system can usually serve a 4,000 square mile area assuming it is outside a major population center.[78] In larger urban areas, a system can serve many subscribers in a smaller area through frequency reuse.[79] In order to coexist with continued video operations on these same channels, equipment is designed to operate within the 6 MHz channels currently used for traditional wireless cable service.[80]

Each of the Commission's segmentation proposals in the *Interim Report* would result in loss of about 90 MHz of spectrum in the 2.5 GHz. If MDS operators were to attempt to serve the same number of subscribers with less spectrum, they must redesign operating systems with a supercell architecture as cellular systems. Moreover, existing cellular systems, faced with reduced spectrum, would require an increase in the number of cells in a given system by a factor of up to 2.7.[81] Thus, the reduction in channel capacity will increase the number of cells required to serve the same number of customers and will, thus, dramatically increase the cost of providing service in that market.[82] An increase in the number of cell sites requires increased capital investment and operating expenses,[83] including costs for backhaul, network maintenance, site rental and site utilities.[84] In many markets, the number of subscribers that Sprint intends to

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[76] *Id.* at 4. *See also, Interim Report* at 39 n.55.

[77] *Id.*

[78] *Id.* at i, 6.

[79] *Id.* at 6.

[80] *Id.* at 3.

[81] *Id.* at 25.

[82] *Id.* at 25-29.

[83] *Id.* at 26-27.

[84] This also causes increases in the number of radios, technicians, trucks and tools. *Id*. at 28.

attract will not support a two-way system that implements a more expensive multi-cell system.[85] Thus, the *HAI Study* demonstrates if the Commission reduces the amount of spectrum in the 2.1 or 2.5 GHz band to MDS/ITFS, operators will be left with the Hobson's choice of either serving fewer customers and retaining a supercell structure or adding new sites to maintain coverage, neither of which is economically viable.[86]

A decrease of any amount of spectrum from existing and implemented band plans would severely disrupt Sprint's business plan. For example, assuming Sprint has access to 26 channels[87] in a market with approximately 173,930 POPs, it must invest $479 per subscriber (in capital investment only, and not including sunk costs[88]) to roll out a broadband access service in a supercell configuration. If Sprint had access to only eleven channels, the required level of investment rises by a factor of six, because of the increased costs to build-out the additional cells and/or the reduced number of subscribers, to $2928 per subscriber.[89] Thus, the incremental capital investment per subscriber increases dramatically with fewer channels. In those markets in which the system must be redesigned from a supercell market to a multi-cell market, the increases are particularly dramatic.[90] If the amount of spectrum available to Sprint is reduced, dramatic cost increases will occur in every market in which Sprint is providing, or plans to

[85] To offset the increased network investment required for a cellular system, there must be increased demand by subscribers. *Id.* at 8.

[86] *Id.* at 6-7. Each of the Commission's segmentation proposals in the *Interim Report* would result in the loss of about 90 MHz of spectrum, requiring displacement of large numbers of licensees. A reduction of spectrum through segmentation will lead to the degradation of service quality, an inability to provide the voice service that Sprint intends to provide in the future and substantially increased cost to provide service to the same number of subscribers. "The effects of a reduction in the available bandwidth can only be mitigated in one of two ways, either of which depresses the profitability of the systems: constructing additional cells to reuse the remaining spectrum, or reducing coverage to serve fewer subscribers." *Id.* at i.

[87] As described in the *HAI Study*, 26 channels of 6 MHz each is a reasonable estimate of the spectrum to which a two-way system have access. *HAI Study* at 7. However, because of interference issues, overlapping market areas and the possible unavailability of certain channels in certain markets, an operator often will have access to less than 26 channels. *Id.* Twenty-six channels would provide data rates that would be competitive to other broadband providers. *Id.*

[88] *Id.* at 11, n.7.

[89] *Id.* at 26.

[90] *Id.*

provide, service, making the service economically infeasible. Specifically, the internal rate of return where spectrum is reduced from 26 to 11 channels would decrease to unacceptable levels in every case, "effectively eliminat[ing Sprint] as a market competitor."[91] As stated succinctly in the *HAI Study*, "even after ten years of operation and accounting for the value of the operation, no market can viably operate with only 11 channels."[92]

Sprint also requires access to the entire 2.1 and 2.5 GHz band to roll-out two-way service because as the numbers of customers increases, and every market projection indicates that they will, the amount of spectrum available to a particular end user decreases. Thus, as the number of customers increase, bandwidth needs increase accordingly.[93] High-bandwidth services, such as video applications,[94] and bandwidth-intensive services, such as voice, are projected to grow rapidly, further increasing spectrum requirements.

B. The Existing Complex Licensing Scheme For MDS/ITFS Spectrum, The Technical Characteristics Of The 2.1 And 2.5 GHz Bands, And The Economics Of The Fixed Wireless Business Makes Any Segmentation Option Unworkable.

As recognized in the *Interim Report*, the interdependent, interleaved nature of MDS and ITFS, the reliance on access to ITFS spectrum by MDS operators, the different service areas and the different services being provided make segmentation extremely difficult, if not impossible.[95] Moreover, "[b]ecause of the regulatory flexibility that the Commission has allowed in this band and the licensing differences between each geographic area, there is no typical MDS/ITFS system."[96] MDS and ITFS licensees are permitted to swap channels.[97] Different operators use

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[91] *Id.* at 29.

[92] *Id.*

[93] *Strategis Report* at 69-70.

[94] *HAI Study* at 18.

[95] *Interim Report* at ii ("incumbent ITFS and MDS use of the 2500-2690 MHz band varies from one geographic area to another. This lack of uniformity presents serious challenges to developing band sharing or segmentation options that could be used across the country without severely disrupting ITFS and MDS use").

[96] *Interim Report* at 55.

different band plans depending upon the needs of a market and channel availability.[98] Not all channels are available in every market because (1) licenses may be unavailable due to interference concerns; (2) not all licensees wish to lease their capacity for use in a two-way system; (3) some spectrum is devoted to purely ITFS uses; and (4) the spectrum may be used as a guardband.[99] Thus, segmentation of particular channels would have a different impact on every market in which Sprint operates.[100]

In addition, all 2.1 GHz and 2.5 GHz band plans require separation between upstream and downstream data transmissions.[101] As noted in the *FCC Interim Report*, the transceivers utilized at subscriber premises require separation between upstream and downstream transmissions. Although the current generation of transceivers requires a separation of approximately 42 MHz, the industry anticipates that this figure will be reduced to 30 MHz within the near term. Thus, the model band plans annexed to the *FCC Interim Report* as Appendix 3.4 provide a 30 MHz (five 6 MHz channel)s "separation" band (the specific channels varying from plan to plan).[102] It is important to note that any guard bands required for separation purposes between upstream and downstream transmissions will not lie fallow. Those separation channels can be paired with operations on the MDS 1 and 2/2A channels to provide for efficient use of all of the channels.

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[97] *NPRM* ¶ 61.

[98] *See* Comments by The Wireless Communications Association International, Inc. filed in this proceeding describing the different band plans being deployed by Sprint in each market. As described in the chart and accompanying text therein, any of the Commission's segmentation options would severely disrupt Sprint's operational systems.

[99] *HAI Study* at 7.

[100] *Interim Report* at 62 ("because of the complex licensing scheme present in this band due to the mix of auction winners, incumbent ITFS and MDS licensees and the channel swaps and lease agreements that have been implemented, blanket statements as to the effect of segmentation on any specific market area cannot be made. To fully understand the implications of any segmentation plan of the ITFS/MDS services, each geographic area would need to be analyzed individually").

[101] *Interim Report* at 55 (discussing the necessity of a 30 MHz separation between upstream and downstream transmissions).

[102] *See* the discussion of segmentation options in the Comments of the Wireless Communications Association International, Inc. filed in this proceeding.

IV. Relocation Of Either MDS Or ITFS Is Not Workable.

If the Commission determines, contrary to the evidence presented herein, that either segmentation or relocation of incumbent users from the 2.1 GHz and 2.5 GHz bands is necessary, it would be required to relocate huge numbers of licensees and operating systems providing substantial service to the public. Such relocation would have far-reaching, harmful effects on both MDS and ITFS operations.

A. The Commission Cannot Pursue Relocation Of 2.1 GHz And 2.5 GHz Licensees Until It Has Identified Acceptable Alternative Spectrum.

The Commission traditionally has not relocated incumbents before replacement spectrum is identified (e.g., 2 GHz MSS).[103] It has not yet identified appropriate spectrum in which to relocate MDS/ITFS, and the *HAI Study* demonstrates that due to propagation characteristics, MDS/ITFS can only operate in spectrum below 3 GHz.[104] Thus, if the Commission contemplates relocation of any MDS/ITFS licensees, it must first identify available spectrum below 3 GHz. Sprint submits that no such spectrum is readily available.

B. Relocation Of Incumbents Would Undermine Confidence In The Auction Process.

MDS BTA licenses were awarded by auction in 1996. The winning bidders were granted exclusive rights to any vacant MDS spectrum and under certain circumstances, to any vacant ITFS spectrum.[105] Relocation would eliminate those rights. MDS BTA bidders valued the

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[103] *See, e.g., Amendment of Section 2.106 of the Commission's Rules to Allocate Spectrum at 2 GHz for Use by the Mobile-Satellite Service*, 15 FCC Rcd 12315 (2000). In that proceeding, as in all Commission proceedings where it has required relocated, it has identified comparable spectrum to which the incumbent licensees could relocate. It has not done so here.

[104] *HAI Study* at 9-10.

[105] *MDS Auction Order* at 9591 ("The available MDS spectrum within a BTA authorization will increase if the unconstructed facilities or unused channels held by an MDS incumbent with transmitter site locations within a particular BTA are forfeited or if previously proposed conditional licenses or modifications are not granted. The holders of the BTA authorizations obtained contingent rights to this spectrum when they received their authorizations, so that the forfeited channels will revert and become part of the BTA authorization up to the boundary of the BTA .... Such a policy provides an incentive for the holders of BTA authorizations to find and document such warehousing violations, resulting in efficient use of fallow spectrum. In addition, authorization

auctioned spectrum based upon its access to available channels in the 2.1 GHz and 2.5 GHz bands and other associated rights. The Commission has recognized elsewhere that "[l]icensees should generally have clearly defined usage rights to their spectrum, including frequency bands, service areas, and license terms of sufficient length, with reasonable renewal expectancy to encourage investment."[106] Although the *Two-Way Order* made it easier for MDS/ITFS licensees to provide broadband Internet access, it did not change Commission policy that has always allowed MDS/ITFS to provide non-video services. It is critical to the credibility of the auction process that winning licensees enjoy a reasonable expectation that the Commission will not diminish the value of the licenses by making the spectrum unusable for its intended purpose a mere four years after the auction.

C. Existing Commission Relocation Rules Are Unworkable In The 2.1 GHz And 2.5 GHz Bands.

Under the *Emerging Technologies* policy, the Commission declined to adopt uniform relocation rules, concluding instead that "as new services develop, we may review our relocation rules and make modifications to these rules where appropriate."[107] Relocation of MDS/ITFS licensees presents unprecedented difficulties. Unlike other relocation proceedings, the Commission for the first time, would face relocation of operational systems that are providing service to tens of thousands of residential and business customers directly using up to 33 licensed channels. Previous relocation efforts have involved the relocation of internal microwave links, not operational systems providing mass market services.

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rights may be revoked or terminated because of gross misconduct, misrepresentation or bad faith by an applicant." *Id.* at 9612.).

[106] *Secondary Markets Policy Statement* ¶ 20.

[107] *See Amendment to the Commission's Rules Regarding a Plan for Sharing the Costs of Microwave Relocation*, First Report and Order and Further Notice of Proposed Rulemaking, 11 FCC Rcd 8825, 8870 (1996) (citations omitted) *("Microwave Relocation First R&O").*

Existing Commission relocation reimbursement rules are woefully inadequate for relocating MDS/ITFS operations. When the Commission initially established rules and policies for relocating incumbent fixed microwave licensees to accommodate emerging technologies in its *Emerging Technologies* proceeding,[108] it stated that in the event of an involuntary relocation of an incumbent licensee, the emerging technology licensee must (1) guarantee payment of all costs of relocation to a *comparable* facility, including all engineering, equipment, site and FCC fees, and any reasonable, additional costs; (2) complete all activities necessary for placing the new facilities into operation, including engineering and frequency coordination; and (3) build and test the new system to determine comparability.[109] In order for the new facilities to be comparable, such facilities must be equal or superior to the incumbent's existing facilities. Comparability is based on: communications throughput, system reliability, and operating costs. The FCC required PCS licensees to provide incumbents "merely with enough throughput to satisfy their needs at the time of relocation, rather than to match the overall capacity of the system."[110] The FCC further required new entrants to compensate incumbents for any increased recurring costs associated with the replacement facilities (e.g., additional rental payments and increased utility fees) for a period of five years.[111]

The FCC, however, also found that compensation for the depreciated value of old equipment would not enable incumbents to construct comparable replacement systems without imposing additional costs on the incumbents.[112] Although replacement facilities must be at least equal to the incumbent's system with respect to throughput, system reliability, and operating

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[108] *See, e.g., Redevelopment of Spectrum to Encourage Innovation in the Use of New Telecommunications* Technologies, Report and Order, 7 FCC Rcd 6886 (1992) (*"Emerging Technologies First R&O"),* Third Report and Order and Memorandum Opinion and Order, 8 FCC Rcd 6589 (1993).

[109] *Emerging Technologies First R&O* at 6890; *see also* 47 C.F.R. §101.75(a).

[110] *Microwave Relocation First R&O* at 8841. Thus, if a dispute arises, the FCC would determine an incumbent's needs by looking at actual system use rather than total capacity at the time of relocation.

[111] *Id.* at 8842.

[112] *Id.* at 8844.

costs, the FCC stated that other aspects of the system (e.g., bandwidth) need not be equivalent.[113] In addition, the FCC limited reimbursement of transaction expenses (e.g., attorney and consultant fees) that are directly attributable to an involuntary relocation to two percent of the "hard" costs involved (i.e., the actual costs associated with providing a replacement system, such as equipment and engineering expenses).[114] Although consideration of these costs is a necessary starting place, because MDS/ITFS licensees operate effectively shared systems providing service to the public, rather than stand-alone internal links, reimbursement for these costs alone would not adequately compensate licensees. Relocated entities must be made whole for lost opportunity costs, and for the costs of existing lease, interference and channel swapping agreements, in addition to the costs of developing and replacing equipment. This is particularly true for those entities whose BTA licenses convey rights and opportunities beyond simply granting exclusive access to the specific frequencies encompassed by the license.

In proposing relocation of MDS/ITFS spectrum, the Commission has failed to account for (1) BTA holders' rights acquired through auction in other MDS spectrum, (2) value of capacity leases with ITFS licensees and (3) right to revenues under customer service contracts. The Commission's existing relocation rules do not remotely deal with issues such as these and they must.

D. Reallocation Of 2.1 GHz And 2.5 GHz Bands Likely Would End The Intricate, Interdependent Relationships Developed Between MDS And ITFS Licensees.

Since the Commission first permitted ITFS licensees to lease their capacity, it has encouraged the interdependent relationship that has evolved between MDS operators and ITFS licensees.[115] MDS operators often provide much needed financial support for ITFS educational

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[113] *Id.* at 8843.

[114] *Id.* at 8848.

[115] *See supra* at 15, note 59. *See, e.g., Amendment Of Parts 1, 21 And 74 To Enable Multipoint Distribution Service And Instructional Television Fixed Service Licensees to Engage in Fixed Two- Way Transmissions*, Notice Of Proposed Rulemaking, 12 FCC Rcd 22174 , 22202 (1997) (citations omitted) ("We believe that enhancing the

programming.[116] MDS operators provide technical and engineering support to ITFS entities. MDS operators offer free service to schools, including distance learning facilities and Internet service for students, teachers and administrators. The educational community is counting on the new services that are being provided over broadband facilities. "[T]he Internet enables education to occur in places where there is none, extends resources where there are few, expands the learning day, and opens the learning place….it connects people, communities, and resources to support learning .... it adds graphics, sound, video, and interaction to give teachers and students multiple paths for understanding."[117]

The educational community requires the assistance of private industry to implement these broadband educational developments.[118] Sprint has provided substantial assistance to the educators from whom it leases capacity. Specifically, Sprint provides educators with assistance for broadband applications like video streaming; development of intranet sites; construction of point-to-point facilities; purchase of studio equipment; and construction and purchase of equipment for satellite uplinks and downlinks.[119]

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competitive viability of wireless cable service through maximization of flexibility and service offerings promotes the underlying educational purpose of ITFS. The growth of wireless cable has led to the continued development of ITFS by supporting and funding approximately 95 percent of all new ITFS applicants. As we have stated, 'revenues are key to this ITFS-MMDS partnership. Leasing channel capacity for the transmission of commercial programming generates revenues that may be vital to the continuing operations of authorized ITFS systems, to the successful deployment in many markets of ITFS service, and to the service's public interest benefits.' In evaluating the comments submitted in this proceeding and proposing changes to rules governing permissible service of ITFS stations, ITFS programming requirements, and usage of ITFS spectrum, we are mindful both of our emphasis on the primary educational purpose of ITFS, as well as our desire to in part promote that purpose through enhancements to the competitive viability of wireless cable service").

[116] *Interim Report* at 17.

[117] *Web-Based Education Report* at iii.

[118] *See supra* at 16, note 49.

[119] An example of the type of relationships Sprint enjoys with educational entities is the Oakland Unified School District. Sprint provides high-speed Internet access to 27 Child Development Centers, benefiting more than 2000 students in kindergarten through third grade. The school district's director of early childhood education has praised the arrangement with Sprint, stating that "Sprint has made it possible for our teachers to better educate students about the vast resources of the Internet and to use existing computer equipment more effectively in the classroom. This opportunity to use the Internet puts them on a level playing field with other children across the country." Sprint News Release, *Sprint Captures Two Awards for Broadband Education Contributions*, News Release (Jan. 25, 2001). The Point, *Young Minds at Fast Speeds*. (Attachment B). In addition, Sprint is working with the Varnett School, a

If the Commission relocates any portion of the ITFS spectrum, the ITFS licensees will lose existing and anticipated lease revenue and the services and benefits provided to them by their lessors, including Sprint. Without this support, many ITFS licensees cannot afford to continue providing distance learning or broadband access to students.[120]

The Commission relied upon these MDS and ITFS relationships for support in its Secondary Markets initiative:

> We have also revised our rules in ways that have facilitated the operation of secondary markets. By way of example, in MM Docket No. 97-217, we revised technical rules that permitted greater opportunities for ITFS licensees to lease capacity to commercial operators, thereby giving ITFS licensees more flexibility to achieve their educational objectives .... ITFS and MDS entities typically operate in symbiotic relationships .... In that proceeding, we relaxed a number of technical requirements to allow ITFS and MDS licensees to transform their systems from one-way analog video distribution to the provision of new digital and two-way communications services while maintaining sufficient capacity to develop these advanced service offerings. This transformation was facilitated by a series of technical rule changes that eliminated differences in the technical requirements between these two services and afforded MDS and ITFS licensees additional flexibility of use. These rule changes have made the allowable uses of ITFS and MDS spectrum more tangible, allowing MDS and ITFS licensees to trade spectrum usage rights more readily in the secondary markets. System operators may also operate more seamlessly across MDS and ITFS spectrum, paving the way for system upgrades that afford ITFS entities additional capacity. As a result, ITFS entities may enjoy greater opportunities to satisfy their educational needs. These changes significantly enhanced the economic viability of both ITFS and

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charter school in Houston, Texas to provide free IP connections and discounted installation so that the school can have high-speed service. Prior to receiving service from Sprint, the school had waited for eight months to receive DSL from Southwestern Bell. It received service from Sprint, at a substantially reduced rate, less than two months after Sprint commenced operation of its two-way system in Houston. Sprint has made this offer to other charter schools in Houston. Finally, Sprint has agreements with the University of Arizona-Phoenix and the University of Colorado-Boulder to develop educational applications for use with Sprint Broadband Direct[SM]. Both universities intend to develop applications that allow live digital webcasts, on-demand digital webcasts of classes, and videoconferencing over the Internet.

[120] *See supra* at 15, note 59 .

> MDS services, while making it possible for ITFS licensees to lease their spectrum usage rights to MDS operators in a two-way environment.[121]

The Commission's termination of the very relationships that it so recently praised and looked to to support its secondary market proposals would be an arbitrary and unreasonable departure from established policy.

V. Sprint Strongly Opposes Any Effort To Reallocate The 2.1 GHz Band.

Sprint strongly opposes the Commission's proposal to reallocate the previously auctioned 2.1 GHz band, in which MDS Channels 1 and 2/2A are located and operational.[122] Channels MDS 1/2/2A are being used in operational two-way systems for upstream transmissions, including in all of the markets where Sprint has already launched two-way service. The Commission has encouraged the licensing of these channels for two-way by adopting special procedures to provide for the expedited licensing of upstream facilities on MDS Channels 1 and 2/2A.[123] Sprint applied for, and has obtained early authorizations to utilize the 2.1 GHz band for upstream communications, and has invested substantially to deploy broadband operations in those bands. These channels likely will be the first used for upstream channels in all two-way markets. As described above, the rights to this spectrum were ensured in earlier spectrum auction proceedings, and factored into MDS operators' bids in the 1996 auction.

The spectrum available at 2.1 GHz provides operators with additional channels that, depending on the other spectrum available in the 2.5 GHz band in a given market, are often required for a system to be viable.[124] These channels also permit more efficient use of the

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[121] *Promoting Efficient Use of Spectrum Through Elimination of Barriers to the Development of Secondary Markets*, Notice of Proposed Rulemaking, FCC 00-402, ¶ 86 (Nov. 27, 2000) (citations omitted).

[122] *NPRM* at ¶ 55.

[123] FCC Public Notice, *Mass Media Bureau Provides Further Information on Application Filing Procedures and Announces Availability of Electronic Filing for Two-way Multipoint Distribution Service and Instructional Television Fixed Service, Public Notice*, DA 00-1481 (June 30, 2000).

[124] *See generally* HAI Study (discussing the problems associated with having access to fewer than 26 channels for providing service).

spectrum. As described above, because of the required separation between upstream and downstream transmissions, these channels can easily be paired with spectrum in the 2.1 GHz and 2.5 GHz bands and naturally provides the necessary separation between upstream and downstream transmissions.

Channels MDS 1 and MDS 2/2A are often licensed to the operator as BTA licenses, eliminating the need for negotiation with licensees and lending itself to expeditious deployment of the channels. Finally, when the Commission examined reallocating the 2.1 GHz band in the *Emerging Technologies* proceeding, it decided against such a move, instead choosing to give MDS "sufficient time to develop."[125] Reallocation now, just as MDS is developing and fulfilling an important need by providing needed competitive broadband services to the mass market would amount to an unjustifiable reversal of policy.

VI. An Abundance Of Available Spectrum Exists Elsewhere For Other Advanced Wireless And 3G Services.

There is an abundance of available spectrum in which 3G services can be implemented. At least 155 MHz of spectrum outside the 2.1 GHz and 2.5 GHz bands are presently available: (1) the recently auctioned spectrum at 1850-1990 MHz, (2) 2110-2150 MHz, (3) 1710-1755 MHz, and spectrum at (4) 747-762 MHz and 777-792 MHz.[126] The *NPRM* also is assessing 1755-1850 MHz, which would make even more spectrum available, and given its adjacency to 1710-1755 MHz is a logical choice. Also being examined is spectrum at 698-746 MHz . The Secondary Markets Initiative will provide access to additional spectrum. Third generation services can be encouraged in any of these bands with much less disruption than if the 2.1 GHz and 2.5 GHz bands are reallocated.

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[125] *Emerging Technologies R&O*, at 6889.

[126] The Commission recently reauctioned a significant amount of C and F block PCS spectrum. Sprint urges the Commission to include this spectrum among that identified as potentially available for 3G. *NPRM* ¶ 37.

VII. Global Roaming/Harmonization Is Not Feasible And Not Required.

Sprint does not agree that a "failure … to harmonize U.S. IMT-2000 frequency bands with the rest of the world will harm U.S. consumers, manufacturers, and service providers."[127] The 2000 World Radiocommunications Conference ("WRC-2000") also recognized that "not all the spectrum required for IMT-2000 [3G] can, and must be, obtained from the same frequency bands."[128]

A. Global Harmonization Is Impossible, Given Existing Conflicting Uses Of The 2.1 GHz And 2.5 GHz Bands.

Use of the 2.1 GHz and 2.5 GHz bands for mobile services is not ubiquitous and therefore, is not a viable candidate for global harmonization.[129] Although some European and Asian nations have indicated the availability (in 2010 or 2015) of the 2.5 GHz band for 3G,[130] Western Hemisphere countries (including Canada, Mexico and much of Latin America) favor 1.7 GHz for 3G.[131] Mexico, Canada and Brazil also use the 2.5 GHz band for MDS,[132] as do Malaysia, China and South Africa.[133] Malaysia and China intend to use 2.5 GHz for satellite services as well.[134] Japan and Korea intend to use 2.5 GHz for MSS.[135] CITEL Administrations strongly advocate using 1.7 GHz for 3G[136] and have allocated 2.5 GHz for fixed wireless.[137]

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[127] *NPRM* ¶ 9, citing Cellular Telecommunications Industry Association Petition for Rulemaking ("CTIA") at 2 (filed July 12, 2000).

[128] *Interim Report* at 10-13.

[129] Moreover, the frequency agile software defined radio technology may resolve the issue. *See In the Matter of Inquiry Regarding Software Defined Radios*, ET Docket No. 00-47, Notice of Inquiry, 155 FCC Rcd. 5930, 5931 (2000).

[130] *NPRM* at 24, n.47.

[131] *Interim Report* at 10.

[132] *NPRM* ¶ 24, n. 7; *Interim Report* at 14.

[133] *Interim Report* at 14, n.15.

[134] *Id.*

[135] *Id.*

[136] *See* Letter from Raymond L. Strassburger, V.P. Global Gov't Rel., Nortel Networks to Thomas J. Sugrue, Wireless Telecommunications Bureau Chief, FCC (Nov. 9, 2000) ("Nortel Letter").

Many European Administrations already use 1.7 GHz for second generation GSM,[138] thus, making the band a sound choice for 3G. In addition, although members of the European Union have agreed to offer 3G licenses by January 2002,[139] they have "openly stated that they will not consider 2.5 GHz for use until 2010-2015."[140] "Global use of the 1.7 GHz band would increase pressure on European Administrations to allow present GSM 1800 systems to evolve to 3G, creating increased market opportunities for U.S. manufacturers. That evolution, along with a similar use in the Americas would go a long way towards spectrum harmonization. A similar situation exists in the Americas in the 1.9 GHz band as PCS systems evolve to 3G, and the use of that band becomes more harmonized with the recently auctioned 3G European licenses."[141]

If the United States, Mexico, Canada and Latin America use 2.5 GHz band for MDS/ITFS, the band will be unavailable in any of these countries for 3G. The *NPRM* notes that Mexico, Canada and much of Latin America have all indicated that they intend to provide spectrum for 3G in the 1710-1850 MHz band.[142]' If the United States provides additional 3G spectrum in that band, it would facilitate regional roaming. Considering that Canada and Mexico are the most popular destinations for U.S. residents and the top two U.S. trading partners, improved regional roaming capabilities would fulfill a growing customer need.[143]

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[137] *Interim Report* at 11.

[138] *Id.* at 14; Nortel Letter.

[139] Wireless Insider, *European 3G License Score Card* (Jan. 8, 2001) *available at* http://www.findarticles.com/cf_0/m0BUK/2_19/68928282/print.jhtml (visited Feb. 14, 2001).

[140] Nortel Letter.

[141] *Id.* The success of auctions in England and Germany without harmonized spectrum indicates that it is not necessary.

[142] *NPRM* ¶ 24.

[143] Nearly 60 percent of the trips taken by U.S. residents are to Canada and Mexico. U.S. Department of Commerce, ITA, Tourism Industries (Oct. 2000). In addition, Canada and Mexico are the two top trading partners of the U.S. U.S. Department of Commerce, ITA, United States Foreign Trade Highlights (Sept. 2000).

There is clearly spectrum available for 3G that is more desirable and useful than the 2.1 GHz and 2.5 GHz bands. Nortel Networks has stated that the 1.7 GHz band can be shared between Department of Defense ("DOD") operations and 3G because it is possible to protect DOD from interference.[144] Industry analysis supports this conclusion is possible.[145] CTIA itself has indicated that its first choice for 3G spectrum is 1755-1850 MHz, asserting that it would advance global harmonization.[146]

Importantly, WRC-2000 did not adopt resolutions requiring global harmonization. To the contrary, WRC-2000 concluded that global harmonization is neither possible nor necessary and that only commonality of design and compatibility of services is important.[147] The WRC-2000 resolutions stated that: (1) more than one band pair should be identified to allow countries "to tailor their domestic band plans to their economic development and domestic priorities" and because "some nations already might have encumbered the identified bands with equally vital services that could not be displaced or relocated without significant strategic or economic hardship;[148] (2) nations should be able to choose freely among several, equally valid bands; and[149] that (3) nations should adopt a technology-neutral approach in identifying frequency bands for possible 3G use.[150] A Commission decision to decline to reallocate any part of the 2.1 and 2.5 GHz bands is entirely consistent with the WRC-2000 resolutions.

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144 *See* Letter to Thomas J. Sugrue from Raymond L. Strassburger (Nov. 9, 2000) ("Nortel Letter").

145 *Military, Industry, Not in Lockstep on 3G Spectrum Issues*, Comm. Daily, Feb. 16, 2001, at 1-2.

146 Mary Greczyn, *Wireless Industry Eyes Military Spectrum As First Choice For 3G*, Comm. Daily, Feb. 14, 2001, at 1-2.

147 *Interim Report* at 9-12.

148 *Id.* at 9, 10.

149 *Id.* at 10.

150 *Id.*

The experience of 3G auctions in other countries underscores the need for the Commission to move cautiously in this proceeding and to avoid promoting 3G services at the expense of the advanced fixed wireless services being provided by Sprint and others. For example, Switzerland postponed its 3G auction when the number of bidders fell to four. The Australian 3G auction faced a lack of interested parties and price expectations for the auction have been revised downward.[151] The Italian 3G auction was cancelled; Singapore delayed its 3G auction.[152] France received bids only for two of the four available licenses from two applicants, and other licenses will be awarded later.[153] Poland cancelled its auctions and awarded licenses to the country's three leading wireless carriers. The Dutch and Austrian auctions did not raise the expected revenues.[154] Belgium is exploring alternatives scenarios for awarding its licenses because of lack of interest.[155]

VIII. Sprint PCS Will Provide 3G Services In The Spectrum It Already Holds.

Sprint PCS has announced that it will be able to transition to 3G services in the spectrum it already holds. As stated by Charles Levine, chief operating officer of Sprint PCS:

> the all-digital, all-PCS nationwide wireless network enables Sprint PCS to use existing licensed PCS spectrum in the deployment of 3G -- eliminating the cost to acquire substantial blocks of additional spectrum specifically for 3G…."As we move to 3G, we don't have the need for any "forklift" changes. The vast majority of our current base stations can be upgraded by simply changing out channel cards and installing new

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[151] BWCS, *Prices to Fall Down Under, available at* http://www.bwcs.com/marketing1index2.html (visited Feb. 5, 2001).

[152] Jacqueline Wong, *Singapore delays 3G auction, sweeteners likely, available at* http://biz.yahoo.com/rf/010103/sp156472.html (visited Feb. 1, 2001).

[153] Clar Ni Chonghaile, *Only two candidates for Frances' four 3G mobile phone licenses, available at* http://www.indivudual.com/story.shtml?story=h0131104.400&level3=32895&date=20010201&inIssue=Tru. (visited Feb. 1, 2001).

[154] Todd Jatras, *Around-The-Globe: 3G Auctions Fall Flat, available at* http://biz.yahoo.com/fo/001207/1207atg.html (visited Feb. 1, 2001).

[155] BWCS, 3*G Malaise Spreads to Belgium, available at* http://www.bwcs.com/marketing/index2.html (visited Feb. 7, 2001).

> software,"…."We built the Sprint PCS network with the 3G evolution in mind…."[156]

Based upon its own experience, Sprint has concluded that efficient 3G systems can be implemented in existing spectrum, further supporting the continued allocation of the 2.1 and 2.5 GHz bands for MDS/ITFS.

Conclusion

Sprint fully supports the promotion and launch of 3G services, but strongly urges the Commission not to allow the advancement of 3G services to be at the expense of competitive MDS/ITFS advanced fixed wireless services. The advanced fixed wireless services being rolled out in the 2.1 GHz and 2.5 GHz bands fulfill the Congressional mandate to the Commission to "encourage the deployment on a reasonable and timely basis of advanced telecommunications capability to all Americans." The broadband services being provided by Sprint are being eagerly received by the public, and are effectively competing with cable and DSL, including in rural markets. Moreover, the interdependent relationship between MDS and ITFS that supports and encourages education depends upon access to this spectrum.

The options available to the Commission to allow 3G use in the 2.1 and 2.5 GHz bands are unworkable, and if attempted, will irreparably harm Sprint's business plan for advanced fixed wireless services in these bands. First, credible studies demonstrate that this spectrum cannot be shared between fixed and mobile users. Second, segmentation is not an option because the entire band, including 2.1 GHz, must be available for the roll-out of services. Segmentation also would trigger massive relocation. Appropriate relocation spectrum, however, has not been identified; current relocation procedures are inadequate to reimburse licensees for existing and operating mass market systems; and without the entire 2.1 GHz and 2.5 GHz bands, it would not be

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[156] Wireless Week, *Sprint Partnership with Airgate Wireless, LLC on Track to Win PCS Spectrum Licenses in Five Markets During FCC Auction; Provides Adequate Capacity for Sprint PCS Services for the Next 10 Years, available at* http://www.wirelessweek.com/index.asp?layout=print_page&articleID=PR20010126CGF039 (visited Jan. 26, 2001). *See also Next Generation.* AT&T has also said that they can transition to 3G in existing spectrum. Theresa Foley, *US Forced to Make U-Turn on 3G Spectrum Allocation,* Comm. Week International (Oct. 23, 2000) *available at* http://www.findarticles.com/cf_0/m0UKG/2000_Oct_23/66705376/print.jhtml (visited Feb. 14, 2001).

financially feasible for Sprint to continue to roll-out service. The public interest will be best served by leaving the 2.1 GHz and 2.5 GHz bands undisturbed[157] and relying upon other available spectrum for 3G services that will not require relocation of MDS/ITFS licensees.

Respectfully submitted,

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[157] This is particularly true when compared to the uncertainty surrounding 3G. First, because the *NPRM* specifically chooses not to require that the services that are ultimately provided are 3G, those services could be nothing more than marginally improved mobile service. In addition, the future of 3G is unproven and uncertain, and some experts even doubt that it will see the light of day, "With no infrastructure, no handset, no research, no new services, and no new evidence to suggest the system will be vital to people, the future is not the safe bet many believe it to be." Eugene Lacey, N*egroponte: 3G will not see the light of day* (Sep. 14, 2000) *available at* http://www.zdnet.co.uk/cgi-bin/printnews.cgi. Morgan Stanley has predicted that even by 2005, 3G phones will only account for 13.5 percent of mobile phones shipped. Morgan Stanley Dean Witter, *Mobile Phone Industry*, at 14, 24 (Jan. 19, 2001) ("We think that the 3G roll-out is likely to be later than expected, and that 3G phones may struggle for a while to differentiate themselves."). *See also*, BWCS, *Late, Slow and Expensive: The 3G Express Hits the Buffer*s, *available at* http://www.bwcs.com/marketing/index2.cfm?subcat=42id=1 (visited Feb. 6, 2001) ("it is now becoming increasingly clear that 3G services will also arrive later than expected and perhaps most crucially will offer much slower data speeds than had been hoped for"); Stephanie Losi, *3G: Hard News or Hype*, Wiireless.NewsFactor.com, *available at* http://dailynews.yahoo.com/h/nf/20010103/tc6325_1.html (visited Feb. 1, 2001) (discussing the lack of consumer interest in 3G services); PR Newswire, *Key 3G Wireless and Mobile Internet Services Identified in New Research by Alexander Resources* (Feb. 20, 2001) *available at* http://www.finance.individual.com/display_news.asp?doc_id=RR20010220DATU0502page=news (visited Feb. 21, 2001) (discussing that very few of the planned 3G services would achieve a high level of market acceptance and that most would not require the high bandwidths planned for 3G services); *Next Generation* at B4 quoting the executive vice president and chief financial officer of Verizon Wireless: "For the next three to four years, I don't see the need to move rapidly towards 3G…[u]pgraded 2G technology is exactly what we need to satisfy the customer."

CERTIFICATE OF SERVICE

I, Theresa L. Pringleton, do hereby certify that I have on this 22nd day of February, 2001, had copies of the foregoing "COMMENTS OF SPRINT CORPORATION" electronically delivered, to the following:

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